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in which they occur are unquestionably those of ordinary dwellings. No pits were observed in the dwelling *paepae* of Hiva Oa and the natives had no knowledge of such a feature. The single example seen on Fatu Hiva was in the valley of Omo'a in a *paepae* built for a chief's house; it was explained as a place for the temporary storage of food. The occurrence and use of these pits is of interest in connection with the skull pits found in many *me'ae* throughout the group.

All the Marquesan valleys afford an abundance of loose stone, a condition which, coupled with the constant necessity of building platforms and terraces, led to a development of the art of dry stone masonry truly remarkable in a people otherwise as primitive as the Marquesans. It would be difficult for Europeans to improve on the workmanship shown in many of the ordinary *paepae*. The builders seem to have taken pride in using the largest material available, bowlders weighing half a ton being quite common in these purely utilitarian structures.

POSITION OF THE HOUSE

As a rule there was only one house on a *paepae*, but a few *paepae* were observed on which there appeared to have been two, and possibly even three houses arranged longitudinally on the raised rear portion. None of the sites of this sort looked to be very old, and it seems probable that this was a recent development. Such a house group consisted of one large structure, the dwelling, with a small detached building at one or either end. The earth of the unpaved floors of the small buildings contained much ash and charcoal, proving them to have been cook houses. Normally a single house covered the entire rear raised section of the *paepae*, the floor of which was divided longitudinally into two almost equal sections. The front section, which formed the house floor, was paved with flat water-worn bowlders, usually small and of uniform size. The rear section, which formed the foundation for the bed, was unpaved, and its surface stood six to eight inches below the level of the floor.

FRAMEWORK OF THE HOUSE

The main timbers of the house were commonly made from breadfruit wood, but *mio* (*Thespesia populnea*) was also employed, especially when the posts were carved into tiki form. The timbers were carefully hewn and dressed and sometimes were elaborately carved. The essential elements of the framework were the end posts and the ridgepole, the front posts and the stringer. The great length of some of the ancient houses, upward of a hundred feet, necessitated the use of additional posts in regard to which Gracia says (28, p. 123), "If it is thought on account of the length [of the house] that the first two posts are not sufficient they plant a third just in the middle of the hut, or even a row." None of these very large structures have survived, and it is impossible to give additional details.

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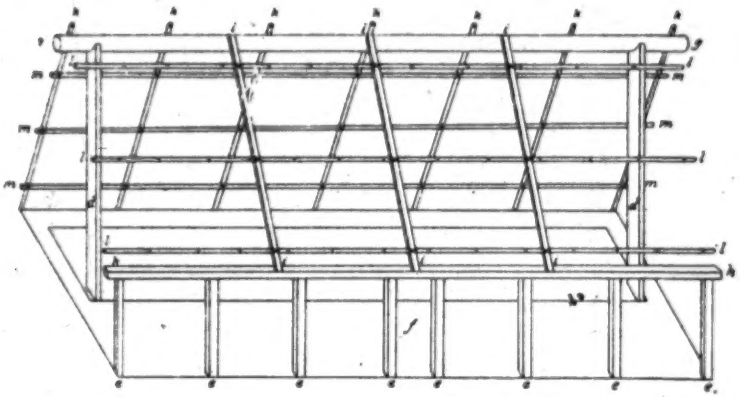

FIGURE 2.—Diagram showing framework of a house: *d*, end posts; *e*, wall posts; *f*, door; *g*, ridgepole; *h*, stringer; *i*, rafters of front roof; *k*, rafters of back roof; *l*, cross braces of front roof; *m*, cross braces of back roof.

In ordinary houses the ridge pole is supported by two posts placed one at either end. These posts are triangular in cross section and taper slightly toward the top, where they are deeply notched to receive the ridgepole. (See fig. 3.)

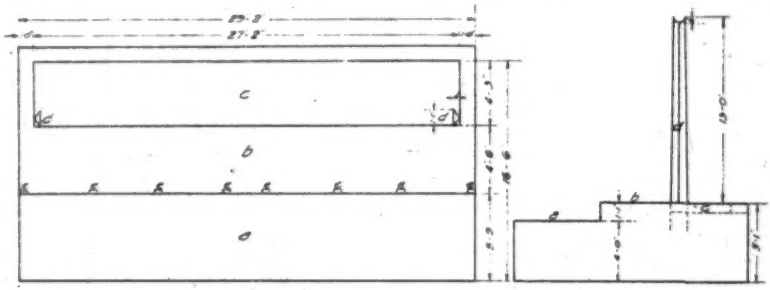

FIGURE 3.—Diagram of a house: *A*, ground plan; *B*, end view showing elevation of the paepae. The parts of the structure indicated are: *a*, paved space in front of the house; *b*, paved floor of house; *c*, bed; *d*, end posts; *e*, wall posts.

Measurements of an end post from a typical dwelling house are: height, (from surface of *paepae*) 13 feet; width at bottom, 12¼ inches; width at top, 8 inches;

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thickness at center (bottom) 4½ inches; thickness at edges, 2 inches; depth of notch for ridgepole, 6 inches. The thickness of the edges remains fairly uniform for the entire length, but the central thickness decreases slightly toward the top. The end posts are planted at either end of the bed space, 6 to 8 inches within the line of the end wall of the house, their broadest sides being toward the interior of the house. In the houses of Hiva Oa the forward edges of the end posts rest against the rear edge of the paved house floor, but in those of Nuku Hiva the posts are placed a foot or more further back, giving the rear roof a much more abrupt pitch.

In all the houses seen the ridgepole was hewn from a single log and ran the entire length of the house, projecting slightly beyond the end walls. Informants say that a palm log was formerly used for this member, but all those seen were of breadfruit wood. Much care was evidently expended in shaping the ridgepole properly. The ridgepoles seen in the Northern Division were round and had been rubbed down to a smooth surface, while those of Hiva Oa were polygonal in cross section with eight to twelve facets of approximately equal width, each of which ran the entire length of the timber. The ridgepole rested in the notches of the end posts, but was not attached to them in any way.

The front posts in ordinary dwellings varied in height from three to five feet, depending upon the size of the structure. In Hiva Oa and Tahu Ata they were commonly rectangular in cross section, but Stewart (59, pp. 233-236), who gives the best early description of Marquesas houses, says that those used in Nuku Hiva were round. The front posts of a large house on the island of Ua Pou were rectangular in the center, but tapered toward the top and bottom, and were almost round at the extremities. In Hiva Oa and Tahu Ata the central pair of posts, which formed the jambs of the door, were cut in such a way as to leave a projecting semicircular shelf at the top. When the posts were carved in the form of tiki a short cylindrical neck was usually left projecting above the head of the figure. The upper ends of the posts were either finished with a semicircular notch, like that on the large end posts, or with a neck which fitted into a hole pierced through the front stringer, or were simply left flat. It is probable that posts with notched ends or necks are ancient and that posts with flat ends were made after the introduction of metal tools.

There were usually six front posts, although houses with four and eight front posts were observed and large houses may have had more. The central pair were rather closely spaced, serving as the jambs of the door, while the others were placed at equal intervals between these and the ends of the house. In most of the structures visited the front posts were not planted in the platform; they were held in place at the bottoms by a deeply notched stringer running the entire

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342 335 length of the house—probably a modern development. In the old house in Ua Pou they were planted immediately behind the *ke'etu* facing the raised house floor, and informants say that holes edged with flat stones were left for the front posts at the time the floor of the house was paved.

Three types of top stringer were used: A simple rectangular beam; a round log similar to the ridgepole, but of smaller size; and a peculiar L-shaped form, said to have been characteristic of the Southern Division in ancient times. Rectangular stringers were normal in recent structures and all those observed were either attached with nails to the flat tops of the front posts, or pierced with holes into which necks on the tops of the front posts fitted. The round stringers rested in semicircular notches in the tops of the front posts, and the only one seen in position was not attached to the posts in any way. The L-shaped stringers were hewn from single logs, and were placed outside the front posts, with their short arms against them and their tops level with the tops of the front posts. At each post the vertical part of the stringer was pierced with four holes, two above and two below, through which sennit lashings were passed back and forth around the front post. When the roof was in place these lashings were invisible from the outside. They were usually amplified on the inside to give an ornamental effect.

In a house at Atu Ona, Hiva Oa, there was an arrangement of posts and stringers similar to that of the front wall across either end of the house, and a single rectangular beam, resting upon the rearmost posts of the end walls, ran along the under surface of the rear roof and was attached to it at eight points. It is almost certain that this feature is due to European influence. A peculiar form of end frame, said to be a modern development, is described on page 295.

THE HOUSE ROOF

342 The front roof of ordinary dwellings was supported by three heavy rafters which were commonly hewn and squared. One rafter was placed in the middle of the house over the doorway, and the other two halfway between it and the ends of the house. (See fig. 2.) There were no heavy rafters at the ends of the roof, where they might be expected. The lower ends of these rafters rested upon the stringer, and their upper ends againt the ridgepole, without extending beyond either. In well built houses the rafters were attached to both the stringer and the ridgepole by elaborate sennit lashings.

The framework thus formed was supplemented by additional rafters of bamboos, or peeled poles of fau, placed vertically at intervals of two or three inches, continuing above the ridgepole and crossing the small rafters of the rear roof. They also projected beyond the stringer and below the line of the front wall, forming narrow eaves. The light rafters were held in place by three longi-